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(71) 出願人 000006622
株式会社安川電機
福岡県北九州市八幡西区黒崎城石2番1号
(72) 発明者 津曲 宏
福岡県北九州市八幡西区黒崎城石2番1号
株式会社安川電機内
(74) 代理人 100105647
弁理士 小栗 昌平 (外4名)

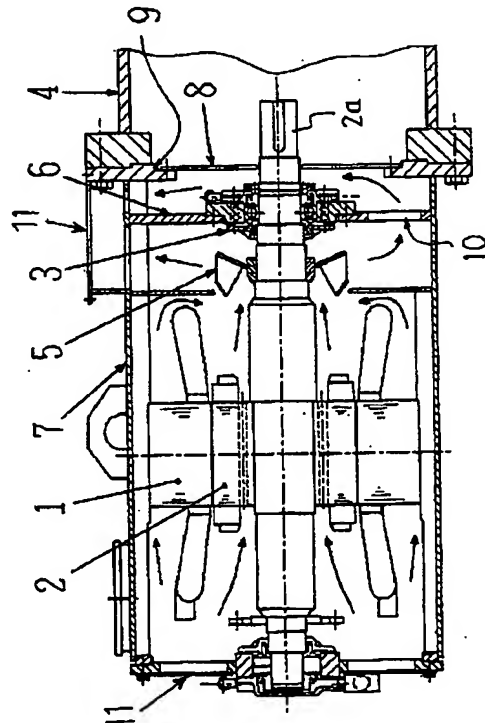
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(54) 【発明の名称】 フランジ取り付け形電動機

(57) 【要約】

【課題】 フランジ取り付け形電動機の連結側軸受部の外面における冷却ができ、連結側軸受部の効果的な冷却が行えるので、連結側軸受部の温度を下げる事ができるフランジ取り付け形電動機を提供する。

【解決手段】 相手機械を取り付けることのできるフランジ9を備えたフランジ取り付け形電動機であって電動機内に冷却ファン5を備えたものまたは外部ブロワを備えたものにおいて、フランジ9に仕切り板8を設け、相手機械の連結側の軸受部3に設けられるブラケット6に冷却風の流通する冷却風流通孔10をあけ、冷却風を連結側軸受3の両面に流すようにした。



【特許請求の範囲】

【請求項1】 相手機械を取り付けることのできるフランジを備えたフランジ取り付け形電動機であって該電動機内に冷却ファンを備えたものまたは外部ブロワを備えたものにおいて、

モータシャフトだけ貫通させる以外は該電動機と前記相手機械との間を仕切る仕切り板を前記フランジに設け、相手機械の連結側の軸受部に設けられるブラケットに冷却風の流通する冷却風流通孔をあけ、該冷却風を前記連結側軸受の両面に流すようにしたことを特徴とするフランジ取り付け形電動機。

【請求項2】 前記冷却風を前記電動機側から前記冷却風流通孔を通して前記ブラケットの相手機械側外面にも流すことにより相手機械からの熱伝播を阻止することを特徴とする請求項1記載のフランジ取り付け形電動機。

【請求項3】 前記冷却風を前記相手機械側から入気し前記冷却風流通孔を通して前記ブラケットの電動機側に流すことにより前記連結側軸受の冷却をおこなうことを特徴とする請求項1記載のフランジ取り付け形電動機。

【請求項4】 前記冷却風流通孔を前記ブラケットの少なくとも下方にあけたことを特徴とする請求項1～3のいずれか1項記載のフランジ取り付け形電動機。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、相手機械を取り付けることのできるフランジを備えたフランジ取り付け形電動機に関し、特に、フランジ取り付け形電動機の連結側軸受の冷却構造に関するものである。

【0002】

【従来の技術】従来、フランジ取り付け形電動機の冷却構造は図3のようになっていた。図において、1は固定子、2は回転子、3は連結側軸受部、4は相手機械、5は冷却ファン、6はブラケット、7はフレーム、9はフランジである。このようなフランジ取り付け形電動機の冷却は、反連結側（図の左端）の入排気口11から冷却風を冷却ファン5または外部ブロワにより入気し、発熱体である固定子1および回転子2の隙間を通過してこれらを冷却した後、連結側軸受部3の電動機ブラケット6の内側片面を冷却して外部へ出ていくことで行われていた。

【0003】

【発明が解決しようとする課題】ところが、従来の冷却構造では次のような問題があった。

1. フランジ取り付け形電動機は、連結側軸受部3が相手機械4に組込まれるため、連結側軸受部3の外面における冷却ができず、したがって連結側軸受部3の温度が高いという問題があった。

2. フランジ取り付け形電動機は、連結側軸受部3が相手機械4に組込まれるため、相手機械4の熱により連結側軸受部3の温度が上昇するという問題があった。

3. 連結側軸受部3に当たる冷却風の温度は上昇しているため、連結側軸受部3の効果的な冷却ができず、連結側軸受部3の温度が高いという問題があった。

本発明はこれらの問題を解決するもので、連結側軸受部3の外面における冷却ができ、したがって連結側軸受部3の温度を低くでき、又、相手機械4の熱により連結側軸受部3の温度が上昇することのないようにできるフランジ取り付け形電動機を提供することにある。又は、連結側軸受部に外気の冷たい風を当てて、連結側軸受部の効果的な冷却ができるフランジ取り付け形電動機を提供することにある。

【0004】

【課題を發明するための手段】上記の課題を解決するため、請求項1記載のフランジ取り付け形電動機の發明は、相手機械を取り付けることのできるフランジを備えたフランジ取り付け形電動機であって該電動機内に冷却ファンを備えたものまたは外部ブロワを備えたものにおいて、モータシャフトだけ貫通させる以外は該電動機と前記相手機械との間を仕切る仕切り板を前記フランジに設け、相手機械の連結側の軸受部に設けられるブラケットに冷却風の流通する冷却風流通孔をあけ、該冷却風を前記連結側軸受の両面に流すようにしたことを特徴とする。請求項2記載の發明は、請求項1記載のフランジ取り付け形電動機において、前記冷却風を前記電動機側から前記冷却風流通孔を通して前記ブラケットの相手機械側外面にも流すことにより相手機械からの熱伝播を阻止することを特徴とする。以上の構成により、連結側軸受部の外面における冷却ができ、したがって連結側軸受部の温度を低くできたり、又、相手機械の熱により連結側軸受部の温度が上昇することのないようにできる。請求項3記載の發明は、請求項1記載のフランジ取り付け形電動機において、前記冷却風を前記相手機械側から入気し前記冷却風流通孔を通して前記ブラケットの電動機側に流すことにより前記連結側軸受の冷却をおこなうことを特徴とする。以上の構成により、冷たい冷却風を連結側軸受部の外面から入気するので、連結側軸受部の温度を低く抑えることができる。請求項4記載の發明は、請求項1～3のいずれか1項記載のフランジ取り付け形電動機において、前記冷却風流通孔を前記ブラケットの少なくとも下方にあけたことを特徴とする。以上の構成により、冷却風が電動機の内部を長い距離にわたって通過するようになるので、効率よい冷却が行えるようになる。

【0005】

【發明の実施の形態】以下、本發明を図1～図2に基づいて説明する。図1は本發明の第1の実施の形態を示すフランジ取り付け形電動機の側断面図である。図において、1は固定子、2は回転子、3は連結側軸受部、4は相手機械、5は冷却ファン、6はブラケット、7はフレーム、9はフランジ、11は入排気口である。そして、

ブラケット6には本発明により冷却風流通孔10が開けられている。それも少なくとも下方に開けられている。さらに、本発明により、連結側軸受部3の外側に仕切板8が設けられている。この仕切板8はモータシャフト2aを貫通させているが、それ以外は電動機と相手機械との間を完全に仕切っている。このように、ブラケット6に冷却風流通孔10を開け、さらに連結側軸受部3の外側に仕切板を設けることで、フレーム7内7の冷却風の通風路をブラケット6をまたいだ電動機内外部にまで拡大しているので、フランジ取り付け形電動機の冷却は、反連結側（図の左端）の入排気口11から冷却風を冷却ファン5または外部ブロワにより入気し、発熱体である固定子1および回転子2の隙間を通過してこれらを冷却した後、一部は連結側軸受部3の電動機ブラケット6の内側片面を冷却して外部へ出ていくとともに残りはブラケット6の冷却風流通孔10を通り、さらにブラケット6と連結側軸受部3の外側の仕切板の間を通過して連結側軸受部3を冷却した後外部へ出ていくようになる。このように、固定子1や回転子2を冷却した冷却風は、連結側軸受部3の内面の冷却を行なった後、ブラケット6部でフレーム7の通風孔とブラケット6の冷却風流通孔10に分かれる。前者のブラケット6の冷却風流通孔10を通過した冷却風は、ブラケット6および連結側軸受部3の表面を流れてその冷却を行い、フレーム7の入排気口11から排気される。また、後者のブラケット6の冷却風流通孔10を通過した冷却風は、ブラケット6および連結側軸受部3の外表面を流れ、相手機械からの熱伝播を阻止しながらフレーム7の入排気口11から排気される。このようにして、連結側軸受部3の外表面における冷却ができるようになり、さらに、相手機械4の熱により連結側軸受部3の温度が上昇するという問題も解消する。

【0006】図2は本発明の第2の実施の形態を示すフランジ取り付け形電動機の側断面図である。図において、図1と同様、1は固定子、2は回転子、3は連結側軸受部、4は相手機械、5は冷却ファン、6はブラケット、7はフレーム、9はフランジ、11は入排気口である。そして、ブラケット6には本発明により冷却風流通孔10が開けられている。それも少なくとも下方に開けられている。さらに、本発明により、連結側軸受部3の外側に仕切板8が設けられている。ここでは、冷却ファン5の形状およびその取付位置を図1から変更し（あるいは、外部ブロワの風向を逆転し）、冷却風を連結側から入気し、反連結側から排気するようにした。すなわち、フレーム7の入排気口11から入気した冷却風はブラケット6の内外に分かれ、一方（ブラケット6の内側に入気した冷却風）はいきなり固定子1や回転子2を冷却した後、電動機の図の左端開口部を通過して外へ排気される。また、ブラケット6の外側に入気した冷却風は

ブラケット6と仕切板8の間を通過して軸受部3の内外面を冷却した後、ブラケット6下方の冷却風流通孔10を通過し、固定子1や回転子2を冷却して、電動機の図の左端開口部の入排気口11を通過して外へ排気される。このようにすると、連結側軸受部に温度の低い冷却風を当てることができるので、連結側軸受部の温度を効果的に下げることができる。また、いずれの実施の形態においても、冷却風流通孔をブラケットに設け、それも少なくとも下方に設けたので、冷却風が電動機の内部を長い距離にわたって通過するようになり、したがって効率よい冷却が行えるようになる。

【0007】

【発明の効果】以上述べたように本発明によれば、以下の効果がある。

1. フランジ取り付け形電動機の連結側軸受部の外面における冷却ができ、連結側軸受部の効果的な冷却が行えるので、連結側軸受部の温度を下げるができる。
2. また、フランジ取り付け形電動機の連結側軸受部の外面に冷却風を流すことができ、相手機械からの熱伝播による連結側軸受部の温度上昇を抑制することができるので、連結側軸受部の温度を下げるができる。
3. さらに、連結側軸受部に温度の低い冷却風を当てることができるので、連結側軸受部の温度を下げるができる。
4. さらに、冷却風流通孔をブラケットにあげ、それも少なくとも下方にあげたので、冷却風が電動機の内部を長い距離にわたって通過するようになり、したがって効率よい冷却が行えるようになる。

【図面の簡単な説明】

【図1】本発明の第1の実施の形態を示すフランジ取り付け形電動機の側断面図である。

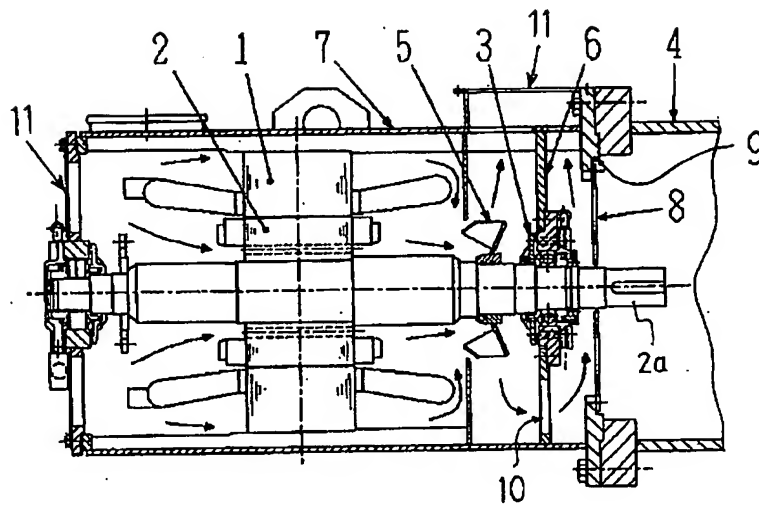
【図2】本発明の第2の実施の形態を示すフランジ取り付け形電動機の側断面図である。

【図3】従来のフランジ取り付け形電動機の側断面図である。

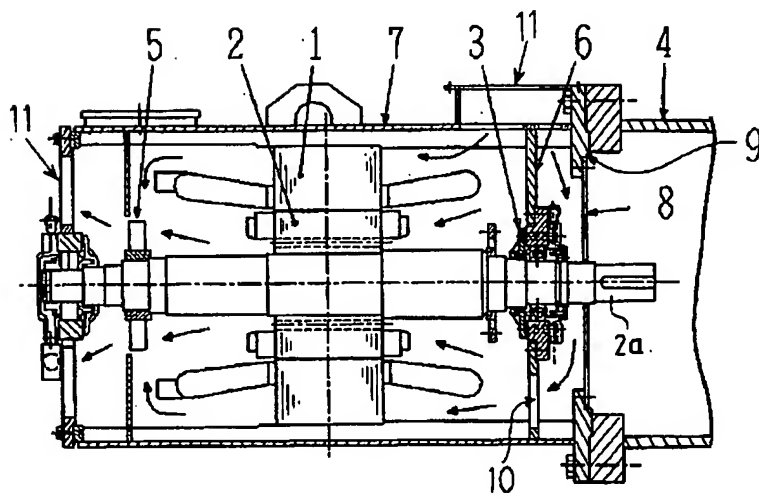
【符号の説明】

- | | |
|----|---------|
| 1 | 固定子 |
| 2 | 回転子 |
| 2a | モータシャフト |
| 3 | 連結側軸受部 |
| 4 | 相手機械 |
| 5 | 冷却ファン |
| 6 | ブラケット |
| 7 | フレーム |
| 8 | 仕切板 |
| 9 | フランジ |
| 10 | 冷却風流通孔 |
| 11 | 入排気孔 |

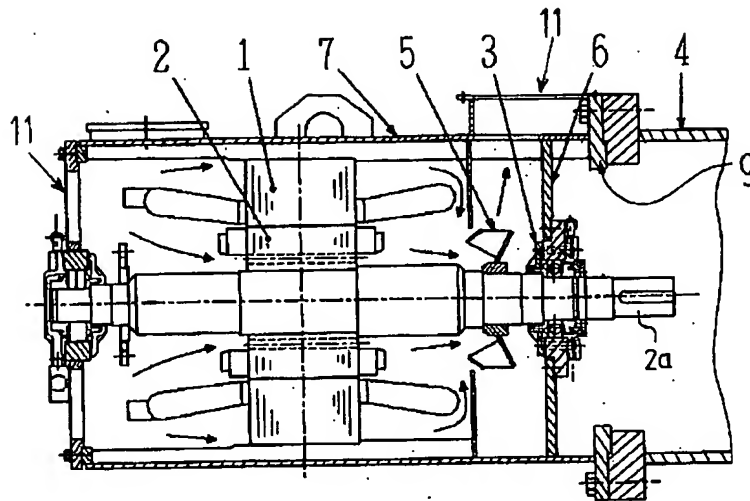
【図1】



【図2】



【図3】



フロントページの続き

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EA19 EB12 GG06

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PATENT ABSTRACTS OF JAPAN

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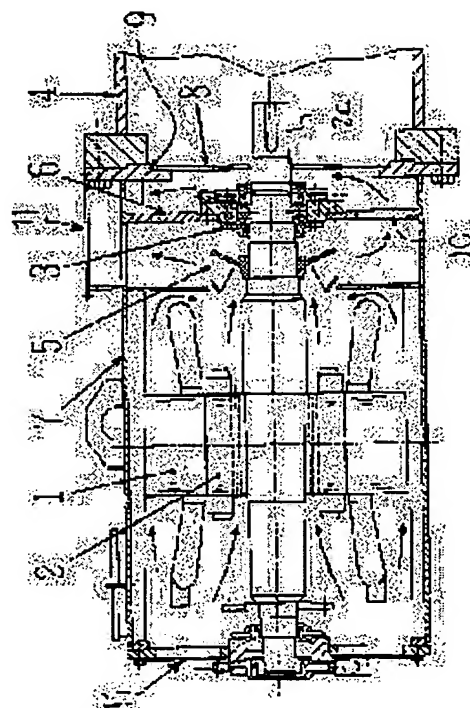
(72)Inventor : TSUMAGARI HIROSHI

(54) ELECTRIC MOTOR OF FLANGE-MOUNTING TYPE

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a electric motor of flange mounting type which can cool in its connection side bearing part and effective cool the connection side-bearing part, so that its temperature can be lowered.

SOLUTION: This electric motor of flange-mounting type is provided with a flange 9 capable of mounting a mate machine, in the electric motor provided therein with a cooling fan 5 or an external blower, a partitioning plate 8 provided in the flange 9, a cooling air circulation hole 10 circulating cooling air, drilled in a bracket 6 provided in a bearing part 3 in a connection side of the mate machine, so as to make the cooling air flow on both surfaces of the connection side bearing 3.



LEGAL STATUS

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[Date of requesting appeal against examiner's decision of rejection]

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CLAIMS

[Claim(s)]

[Claim 1] In a thing equipped with a thing or an external blower which is the flange installation form motor equipped with a flange which can attach a partner machine, and was equipped with a cooling fan in this motor A diaphragm with which it divides between this motor and said partner machine is formed in said flange except making only a shaft penetrate. A flange installation form motor characterized by opening a circulating negotiation hole of the cooling style of the cooling style in a bracket prepared in bearing by the side of connection of a partner machine, and passing this cooling wind to both sides of said connection side shaft carrier.

[Claim 2] A flange installation form motor according to claim 1 characterized by preventing the transference of heat from a partner machine by passing said cooling wind also on a partner machine side outside surface of said bracket through said negotiation hole of the cooling style from said motor side.

[Claim 3] A flange installation form motor according to claim 1 characterized by cooling said connection side shaft carrier by carrying out the intake air of said cooling wind from said partner machine side, and passing to a motor side of said bracket through said negotiation hole of the cooling style.

[Claim 4] A flange installation form motor of claim 1-3 characterized by said bracket opening said negotiation hole of the cooling style caudad at least given in any 1 term.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] This invention relates to the cooling structure of the connection side shaft carrier of a flange installation form motor especially about the flange installation form motor equipped with the flange which can attach a partner machine.

[0002]

[Description of the Prior Art] Conventionally, the cooling structure of a flange installation form motor had become like drawing 3. drawing -- setting -- 1 -- a stator and 2 -- for a partner machine and 5, as for a bracket and 7, a cooling fan and 6 are [a rotator and 3 / a connection side shaft receiving part and 4 / a frame and 9] flanges. After cooling of such a flange installation form motor carried out the intake air of the cooling wind by the cooling fan 5 or the external blower from the close exhaust port 11 by the side of anti-connection (left end of drawing), passed through the crevice between the stator 1 which is a heating element, and a rotator 2 and cooled these, it was performed by cooling inside one side of the motor bracket 6 of the connection side shaft receiving part 3, and going away to the exterior.

[0003]

[Problem(s) to be Solved by the Invention] However, there were the following problems with the conventional cooling structure.

1. Since the connection side shaft receiving part 3 was included in the partner machine 4, cooling of a flange installation form motor in the outside surface of the connection side shaft receiving part 3 was not completed, therefore it had the problem that the temperature of the connection side shaft receiving part 3 was high.
2. Since the connection side shaft receiving part 3 was included in the partner machine 4, the flange installation form motor had the problem that the temperature of the connection side shaft receiving part 3 rose with the heat of the partner machine 4.
3. Since the temperature of the cooling style which hits the connection side shaft receiving part 3 was rising, effective cooling of the connection side shaft receiving part 3 of it was not completed, but it had the problem that the temperature of the connection side shaft receiving part 3 was high.

It is in offering the flange installation form motor to which this invention solves these problems, and is made as for cooling in the outside surface of the connection side shaft receiving part 3, temperature of the connection side shaft receiving part 3 is made low, and the temperature of the connection side shaft receiving part 3 can be prevented from going up with the heat of the partner machine 4. Or it is in applying the cold wind of the open air to a connection side shaft receiving part, and offering the made flange installation form motor which can perform effective cooling of a connection side shaft receiving part.

[0004]

[The means for inventing a technical problem] In order to solve the above-mentioned technical problem, invention of a flange installation form motor according to claim 1 In the thing equipped with the thing or external blower which is the flange installation form motor equipped with the flange which can attach a partner machine, and was equipped with the cooling fan in this motor The diaphragm with which it divides between this motor and said partner machine is formed in said flange except making only a shaft penetrate. The circulating negotiation hole of the cooling style of the cooling style is opened in the bracket prepared in bearing by the side of connection of a partner machine, and it is characterized by passing this cooling wind to both sides of said connection side shaft carrier. Invention according to claim 2 is characterized by preventing the transference of heat from a partner machine in a flange installation form motor according to claim 1 by passing said cooling wind also on the partner machine side outside surface of said bracket through said negotiation hole of the cooling style from said motor side. By the above configuration, cooling in the

outside surface of a connection side shaft receiving part can be performed, therefore temperature of a connection side shaft receiving part can be made low, and the temperature of a connection side shaft receiving part can be prevented from going up with the heat of a partner machine. Invention according to claim 3 is characterized by cooling said connection side shaft carrier in a flange installation form motor according to claim 1 by carrying out the intake air of said cooling wind from said partner machine side, and passing to the motor side of said bracket through said negotiation hole of the cooling style. By the above configuration, since the intake air of the cold cooling wind is carried out from the outside surface of a connection side shaft receiving part, the temperature of a connection side shaft receiving part can be suppressed low. Invention according to claim 4 is characterized by said bracket opening said negotiation hole of the cooling style caudad at least in the flange installation form motor of claim 1-3 given in any 1 term. By the above configuration, since a cooling wind comes to pass through the interior of a motor covering a long distance, efficient cooling can be performed.

[0005]

[Embodiment of the Invention] Hereafter, this invention is explained based on drawing 1 - drawing 2. Drawing 1 is the sectional side elevation of the flange installation form motor in which the gestalt of operation of the 1st of this invention is shown. drawing -- setting -- 1 -- a stator and 2 -- a rotator and 3 -- for a cooling fan and 6, as for a frame and 9, a bracket and 7 are [a connection side shaft receiving part and 4 / a partner machine and 5 / a flange and 11] close exhaust ports. And the negotiation hole 10 of the cooling style is opened in the bracket 6 by this invention. It can also be opened caudad at least. Furthermore, the dashboard 8 is formed in the outside of the connection side shaft receiving part 3 by this invention. Although this dashboard 8 is making shaft 2a penetrate, between a motor and partner machines is in a batch thoroughly except it. By thus, the thing for which the negotiation hole 10 of the cooling style is opened in a bracket 6, and a dashboard is further formed in the outside of the connection side shaft receiving part 3 Since the ventilation flue of the cooling style of seven in a frame 7 is expanded even to the motor inside-and-outside section over a bracket 6, cooling of a flange installation form motor The intake air of the cooling wind is carried out by the cooling fan 5 or the external blower from the close exhaust port 11 by the side of anti-connection (left end of drawing). After passing through the crevice between the stator 1 which is a heating element, and a rotator 2 and cooling these, While a part cools inside one side of the motor bracket 6 of the connection side shaft receiving part 3 and leaves it to the exterior, the remainder passes along the negotiation hole 10 of the cooling style of a bracket 6, and comes to leave it to the backward exterior which cooled the connection side shaft receiving part 3 through between a bracket 6 and the dashboards of the outside of the connection side shaft receiving part 3 further. Thus, after the cooling wind which cooled the stator 1 and the rotator 2 cools the inner surface of the connection side shaft receiving part 3, it is divided into the ventilating hole of a frame 7, and the negotiation hole 10 of the cooling style of a bracket 6 in the bracket 6 section. The cooling wind which passed the negotiation hole 10 of the cooling style of the former bracket 6 flows the front face of a bracket 6 and the connection side shaft receiving part 3, performs the cooling there, and is exhausted from the close exhaust port 11 of a frame 7. Moreover, the cooling wind which passed the negotiation hole 10 of the cooling style of the latter bracket 6 flows the outside surface of a bracket 6 and the connection side shaft receiving part 3, and it is exhausted from the close exhaust port 11 of a frame 7, preventing the transference of heat from a partner machine. Thus, it comes to be able to perform cooling in the outside surface of the connection side shaft receiving part 3, and the problem that the temperature of the connection side shaft receiving part 3 rises with the heat of the partner machine 4 is also solved further.

[0006] Drawing 2 is the sectional side elevation of the flange installation form motor in which the gestalt of operation of the 2nd of this invention is shown. drawing -- setting -- drawing 1 -- the same -- 1 -- a stator and 2 -- a rotator and 3 -- for a cooling fan and 6, as for a frame and 9, a bracket and 7 are [a connection side shaft receiving part and 4 / a partner machine and 5 / a flange and 11] close exhaust ports. And the negotiation hole 10 of the cooling style is opened in the bracket 6 by this invention. It can also be opened caudad at least. Furthermore, the dashboard 8 is formed in the outside of the connection side shaft receiving part 3 by this invention. the configuration of a cooling fan 5 and its attaching position are changed from drawing 1 (or the wind direction of an external blower -- reversing), the intake air of the cooling wind is carried out from a connection side, and it was made to exhaust from an anti-connection side here That is, after the cooling wind which carried out intake air from the close exhaust port 11 of a frame 7 is divided within and without a bracket 6 and, on the other hand (cooling wind which carried out intake air inside the bracket 6), cools a stator 1 and a rotator 2 suddenly, it passes left end opening of drawing of a motor, and is exhausted outside. Moreover, after the cooling wind which carried out intake air to the outside of a bracket 6 passes through between a bracket 6 and dashboards 8 and cools the inside-and-outside side of bearing 3, it passes the negotiation hole 10 of the cooling style of bracket 6 lower part, cools a stator 1 and a rotator 2, passes through the close exhaust port 11 of left end opening of drawing of a motor, and is exhausted outside. If it does in this way, since the low cooling wind of temperature can be

applied to a connection side shaft receiving part, the temperature of a connection side shaft receiving part can be lowered effectively. Moreover, also in the gestalt of which operation, since the negotiation hole of the cooling style was prepared in the bracket and it was also prepared caudad at least, a cooling wind comes to pass through the interior of a motor covering a long distance, therefore efficient cooling can be performed.

[0007]

[Effect of the Invention] As stated above, according to this invention, there are the following effects.

1. Since cooling in the outside surface of the connection side shaft receiving part of a flange installation form motor can be performed and effective cooling of a connection side shaft receiving part can be performed, the temperature of a connection side shaft receiving part can be lowered.
2. Moreover, since a cooling wind can be passed on the outside surface of the connection side shaft receiving part of a flange installation form motor and the temperature rise of the connection side shaft receiving part by the transference of heat from a partner machine can be controlled, the temperature of a connection side shaft receiving part can be lowered.
3. Further, since the low cooling wind of temperature can be applied to a connection side shaft receiving part, the temperature of a connection side shaft receiving part can be lowered.
4. Since the negotiation hole of the cooling style was opened in the bracket and it also ended caudad at least further, a cooling wind comes to pass through the interior of a motor covering a long distance. Therefore, efficient cooling can be performed now.

[Translation done.]

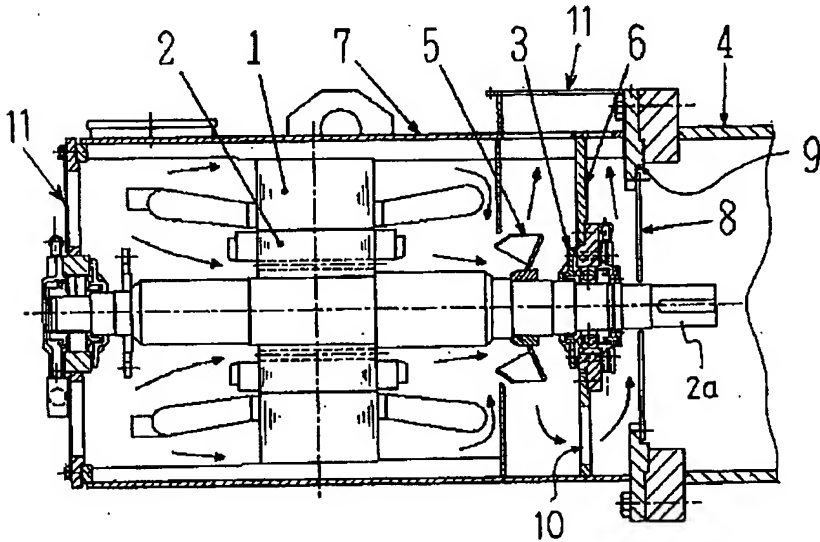
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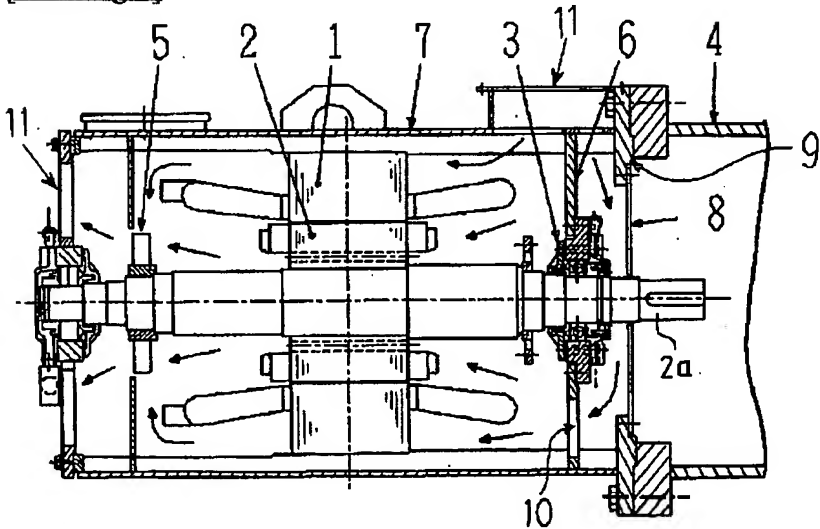
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DRAWINGS

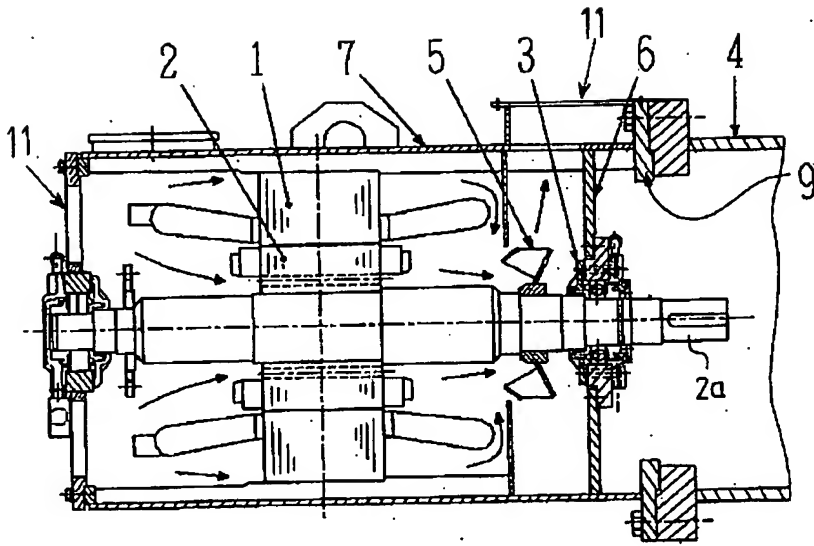
[Drawing 1]



[Drawing 2]



[Drawing 3]



[Translation done.]

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PN - JP2003023753 A 20030124
 PD - 2003-01-24
 PR - JP20010203577 20010704
 OPD - 2001-07-04
 TI - ELECTRIC MOTOR OF FLANGE-MOUNTING TYPE
 IN - TSUMAGARI HIROSHI
 PA - YASKAWA ELECTRIC CORP
 IC - H02K9/06 ; F16C37/00 ; H02K5/00

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TI - Flange attachment type motor, has bracket with circulation hole to circulate cool air to both surfaces on connection side bearing
 PR - JP20010203577 20010704
 PN - JP2003023753 A 20030124 DW200316 H02K9/06 005pp
 PA - (YASW) YASKAWA ELECTRIC CORP
 IC - F16C37/00 ; H02K5/00 ; H02K9/06
 AB - JP2003023753 NOVELTY - A coolant circulation hole (10) is opened in a bracket (6), which provides a partition plate (8) at a flange (9), to circulate cool air on both surfaces of a connection side bearing (3).
 - USE - Flange attachment type motor.
 - ADVANTAGE - Ensures that temperature of connection side bearing can be kept at optimum level during actual motor operations.
 - DESCRIPTION OF DRAWING(S) - The figure shows the sectional side view of the flange attachment type motor.
 - Connection side bearing 3
 - Bracket 6
 - Partition plate 8
 - Flange 9
 - Coolant circulation hole 10
 - (Dwg. 1/3)
 OPD - 2001-07-04
 AN - 2003-163418 [16]

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PN - JP2003023753 A 20030124
 PD - 2003-01-24
 AP - JP20010203577 20010704
 IN - TSUMAGARI HIROSHI
 PA - YASKAWA ELECTRIC CORP
 TI - ELECTRIC MOTOR OF FLANGE-MOUNTING TYPE
 AB - PROBLEM TO BE SOLVED: To provide a electric motor of flange mounting type which can cool in its connection side bearing part and effective cool the connection side-bearing part, so that its temperature can be lowered.

SOLUTION: This electric motor of flange-mounting type is provided with a flange 9 capable of mounting a mate machine, in the electric motor provided therein with a cooling fan 5 or an external blower, a partitioning plate 8 provided in the flange 9, a cooling air circulation hole 10 circulating cooling air, drilled in a bracket 6 provided in a bearing part 3 in a connection side of the mate machine, so as to make the cooling air flow on both surfaces of the connection side bearing 3.

- H02K9/06 ; F16C37/00 ; H02K5/00

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